Feature

Will Rio+20 find a way to more sustainable development?

Twenty years after the original Rio Earth summit, representatives of nations from around the globe are again congregating at Rio to assess what has been achieved and what needs to be done to guide the world on a course towards more sustainable development. Delegates are facing a bulky agenda, along with calls from organisations for additional issues that should be considered. **Michael Gross** reports.

In June 1992, the heads of state or government of 108 countries, as well as representatives from a further 64 governments, assembled at Rio de Janeiro for nearly two weeks at the United Nations Conference on Environment and Development, which came to be known as the Rio Earth Summit. While the meeting itself didn't immediately solve any acute problems, it started a whole range of processes, some of which eventually led to international agreements and changes to national legislation.

One key outcome of Rio was the agreement on the Climate Change Convention, which led to the series of annual climate change summits known as COP (Conference of the Parties), beginning with COP1, held at Berlin in 1995, through to COP17 held in Durban, South Africa, last November–December. The third conference in the series was held at Kyoto and produced the Kyoto Protocol, which was ratified by many countries, but not by the USA.

The Rio Earth Summit also marked a departure for the Convention on Biological Diversity, which was opened for signatures on that occasion and has also developed a successful life of its own. The organisation Green Cross International was founded, and declarations on various aspects of sustainable development were made. Altogether, it looked like a promising start towards a better future, in which prosperity and the environment might coexist peacefully. But have we made any progress on this route in the twenty years that passed?

There has been no shortage of international conferences announcing ambitious plans, but, as the example of climate change and the Kyoto protocol has shown, achieving compliance from national governments can be the hardest part of the process. Thus, when representatives of nations and NGOs meet at Rio from the 20th to the 22nd of June for the 20th anniversary edition of the Rio summit, they still have the same old problems on the agenda, plus a few new ones, plus the big question of how to ensure that change is not only proclaimed but actually implemented.

Taking stock

Part of the activity around the anniversary meeting will be devoted to taking stock. Twenty years are, after all, a time period over which things can and do change quite significantly. Which of the developments started in 1992 can be counted as successful, and in which areas are new and different approaches required?

In a draft declaration that may eventually become part of the meeting's official output, the preparation committees have highlighted both progress and deterioration in the state of the world.

Having acknowledged that there has been some progress in some areas, the draft states "that there have also been setbacks because of multiple interrelated crises — financial, economic and volatile energy and food prices. Food insecurity, climate change and biodiversity loss have adversely affected development gains. New scientific evidence points to the gravity of the threats we face. New and emerging challenges include the further intensification of earlier problems calling for more urgent responses. We are deeply concerned that around 1.4 billion people still live in extreme poverty

Rio views: Rio de Janeiro was the site of the United Nations Conference on Environment and Development in 1992 and will also host the anniversary summit, Rio+20. (Photo: Wikimedia Commons.)

Women's business: Several of the documents feeding into the Rio+20 summit have highlighted the importance of empowering women in developing countries. The picture shows Peul women in Paoua, Central African Republic, where women communities receive help from the Danish Refugee Council to set up small businesses. (Photo: Brice Blondel for HDPTCAR/Wikipedia.)

and one sixth of the world's population is undernourished, pandemics and epidemics are omnipresent threats. Unsustainable development has increased the stress on the earth's limited natural resources and on the carrying capacity of ecosystems."

Regarding the chances of truly sustainable development, the document says: "We nevertheless observe that, despite efforts by Governments and non-State actors in all countries, sustainable development remains a distant goal and there remain major barriers and systemic gaps in the implementation of internationally agreed commitments."

The action to be taken remains rather vague: "We resolve to redouble our efforts to eradicate poverty and hunger and to ensure that human activities respect the Earth's ecosystems and life-support systems. We need to mainstream sustainable development in all aspects of the way we live. We acknowledge the particular responsibility to nurture sustainable development and sustainable consumption and production patterns."

However, a number of detailed reports with specific suggestions have been prepared ahead of the meeting, to which the assembled politicians can refer back, and from which they can choose specific points to endorse and take back to their own countries to implement.

People and the planet

Among the documents prepared ahead of the Rio+20 summit is a report from the UK's Royal Society examining the pressures that a still-growing human population exerts on natural resources. The expert panel led by John Sulston concluded that the current population and consumption trends produce three major challenges. The first is the extreme poverty faced by around 1.3 billion people, which leads to all kinds of other problems, including migration and unsustainable land use. The second is the unsustainably high consumption of material goods in the richer countries, based on a failure to value the natural resources that are overexploited for this consumption and thus threatened by depletion. The final challenge is the population growth itself, which tends to exacerbate other problems faced by developing countries.

These problems are all interconnected in ways that one might describe as a vicious circle, but the report makes nine policy recommendations aiming to cut across these interdependencies. For instance, the report calls for political leadership and financial commitment in providing voluntary family-planning programmes in countries where there is an unmet need for contraception. The hope is that this, in combination with measures improving education for all and lifting the world's poorest 1.3 billion people out of their poverty, will enable women in the developing world to control their fertility and thus lead to better economic prospects for all.

However, apart from helping the developing nations, the rich nations have also some work of their own to do. The report states that "The most developed and the emerging economies must stabilise and then reduce material consumption through dramatic improvements in resource use efficiency, including: reducing waste, investment in sustainable resources, technologies and infrastructures, and systematically decoupling economic activity from environmental impact."

Along similar lines, the report asks national governments to collaborate in developing socio-economic systems that are not dependent on continued growth of material consumption. Wise words indeed, but will they even begin to change today's society, which appears to be as materialistic as ever, as it seems to equate happiness with the purchase of high-tech devices such as smartphones and tablet computers?

It all depends on us, essentially. "This is an absolutely critical period for people and the planet, with profound changes for human health and wellbeing and the natural environment," said Sulston when the Royal Society released the report at the end of April. "Where we go is down to human volition — it's not pre-ordained, it's not the act of anything outside humanity, it's in our hands."

Choosing resilience

An international panel chaired by South African president Jacob Zuma and Finnish president Tarja Halonen issued another report in preparation for the discussions to be held at

Rio, investigating the challenges and opportunities for sustainable development and prosperity with a smaller carbon footprint. Under the title “Resilient People, Resilient Planet: A Future Worth Choosing”, it emphasizes practical aspects and makes 56 recommendations on how to turn sustainable development into a reality, covering three broad areas, namely: empowering people to make sustainable choices; working towards a sustainable economy; and strengthening institutional governance.

“With the possibility of the world slipping further into recession, policymakers are hungry for ideas that can help them to navigate these difficult times,” Zuma said when the report was presented to UN secretary general Ban Ki-moon who had initiated the study. “Our report makes clear that sustainable development is more important than ever given the multiple crises now enveloping the world.”

Co-chair Halonen added: “The Panel has concluded that empowering women and ensuring a greater role for them in the economy is critical for sustainable development.”

The specific “recommendations for a sustainable economy” in the report include the integration of social and environmental costs in setting prices and measuring economic activities. It also suggests that a task force appointed by the secretary general should develop a sustainable development index or a set of sustainable development indicators to monitor progress. Several recommendations specifically encourage governments to use both public investment and incentives to private industry to guide the economy towards more sustainable growth.

While most of the recommendations are targeted at governments, and, to a lesser extent, companies, financial institutions, and international organisations, the report also emphasizes the importance of science as an essential guide for decision-making on sustainability issues, stating (in recommendation no. 51): “Governments and the scientific community should take practical steps, including through the launching of a major global scientific initiative, to strengthen the interface between policy and science. This should include the preparation of regular assessments and digests of the science around such concepts as ‘planetary boundaries’, ‘tipping points’ and ‘environmental thresholds’ in the context of sustainable development. This would complement other scientific work on the sustainable development agenda, including its economic and social aspects, to improve data and knowledge concerning socio-economic factors such as inequality. In addition, the Secretary-General should consider naming a chief scientific adviser or establishing a scientific advisory board with diverse knowledge and experience to advise him or her and other organs of the United Nations.”

Rio+many: A study from the Steps Centre has highlighted the importance of urban fringes, which have been neglected so far. This picture shows Rocinha, which is the largest favela in Rio de Janeiro. (Photo:Wikimedia Commons.)

In its concluding call for action, the report asks the secretary general to use the organisational structures provided by the UN, including summits such as Rio+20, to promote the recommendations to governments. On May 14th, Ban Ki-moon presented the report to an informal session of the UN general assembly. “We need to bring together all relevant actors,” he said, referring to national governments, the private sector, the scientific community, as well as regional authorities. “We also need to mobilize public support around the world for the vision of finally building a sustainable world that guarantees the well-being of humanity, while preserving the planet for future generations.”

Wish lists

Ban Ki-moon brings his own pet project to the Rio summit, under the headline “energy for all”. The 1.3 billion poorest people on the planet are generally without access to electricity. He is campaigning for universal access to energy and for doubling the use of renewable energy by 2030.

Others have voiced additional suggestions of issues to be addressed. Fiona Marshall and Lyla Mehta from the Steps Centre at Brighton, UK, have argued that sustainable development in the urban fringe, technically known as peri-urban areas, should be a key issue at Rio+20.

Around half of the global population is already living in towns and cities, and the proportion is set to rise to 60% by 2030. The peri-urban spaces are the place where much of this growth happens, where people coming in from rural areas end up living, and where they are confronted with pollution and other problems displaced outwards from the city centres. A study conducted by the Steps Centre in the outskirts of Delhi shows that large populations

in these fringe areas don't even have clean drinking water.

"The mismanagement of the urban fringe is becoming an increasing threat to the health and wellbeing of both urban and peri-urban citizens. But opportunities for a more positive relationship between the city and its periphery do exist and should be urgently addressed at Rio+20 and beyond," Marshall and Mehta conclude.

Fred Pearce, author of the recently published book *The Landgrabbers*, pointed to another "glaring hole" in the Rio+20 agenda: land rights. Pearce observes that "unprecedented corporate privatisation and enclosure of the world's common lands — its pastures, fields and forests — is being done in the name of development". However, he objects that "much of it will destroy development and impoverish the poorest".

There is certainly no shortage of problems to be discussed at Rio, but the question is whether the meeting can come up with constructive answers and solutions that will be implemented in the real world. Sustainable Development Goals (SDGs) as successors to the Millennium Development Goals may be one palpable outcome of it.

And then there is the small question of who will show up for the meeting. Newly elected presidents François Hollande and Vladimir Putin have confirmed their participation, while David Cameron and Angela Merkel are going to stay away. At the time of going to press it appeared unlikely that US president Obama will find the time to fly to Rio after the G20 meeting in Cabo San Lucas, Mexico. He may be too busy campaigning for the upcoming election. And the fact that attending Rio and helping to create a better future for the whole world wouldn't help Obama win favours with the undecided voters back home is in itself a clue to where we may find the stumbling blocks on the path to sustainable development.

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Q & A

György Kemenes

György (aka George) Kemenes is Professor of Neuroscience at the University of Sussex. He studied Biology at Eötvös Loránd University (ELTE), Budapest. He completed a PhD in Neurobiology (awarded by ELTE in 1985) under János Salánki's guidance at the Biological Research Institute of the Hungarian Academy of Sciences (HAS) in Tihany, where he then started working in a permanent research position. While still doing his research in Hungary, he was awarded several prestigious international visiting fellowships, which he spent working with Paul Benjamin in the UK and David Carpenter in the US. In 1990 he moved to York to work with Chris Elliott on a two-year research project. In 1992, he was invited to join the Sussex Centre for Neuroscience, a newly established Interdisciplinary Research Centre (IRC), funded by the UK Biology and Biotechnology Research Council (BBSRC). In 1996 he was conferred the DSc title by HAS and became a UK-based Scientific Advisor to the Tihany Biological Research Institute. In 1999 he was awarded an MRC Senior Non-clinical Fellowship at Sussex, followed by a five-year MRC Research Grant in 2005. He became Professor of Neuroscience in 2005. His research has been dedicated to understanding how even seemingly simple nervous systems can generate complex forms of behaviour, including associative learning, and how defined invertebrate neural circuits can be used to study evolutionarily conserved cellular and molecular mechanisms of memory function and dysfunction. He is a Fellow of the Society of Biology and a member of the editorial board of Neural Systems & Circuits.

What turned you on to biology in the first place? I was turned on to biology while still at primary school; however, it was not the influence of a good teacher, but simply fierce teenage competition with a classmate of mine that steered me in the direction of biology. We were about 13 and we tried to beat each other at everything we did, from playing sports, through drawing horror comics (which we mainly did during lessons), to getting the attention of the prettiest girls in the class. He by then had developed a genuine strong interest in biology and decided to enter the annual Biology Challenge competition organized by the local education authority for primary school children. Naturally, I also decided to enter the same competition just to try to beat him. He won the whole competition — I had no chance against him, or indeed against many of the other kids who also competed — but while I was preparing for this competition I got hooked on biology, particularly animal behaviour. And it is just as well he did not become a biologist himself — otherwise he might be writing this Q & A instead of me!

Do you have a favourite paper? I don't have a 'favourite' paper as such, but I have very vivid memories of reading some fantastic papers presenting findings and ideas that were a real revelation to me at the time and actually had a major influence on my career. Perhaps unusually, however, the two papers that were most inspirational for me were not primary research papers but excellent reviews of findings from two then emerging areas in learning and memory research. The first of these papers was Tom Carew's 1996 *Neuron* review "Molecular enhancement of memory formation", an excellent overview of the rapidly expanding field of the role of transcriptional mechanisms in synaptic plasticity and learning and memory. It was this review that made me embark on investigating the possible role of cAMP Element Binding Protein (CREB) in the formation of 'flash-bulb'-like long-term associative memory in *Lymnaea stagnalis*. By 1996 I had been using this molluscan species in my experiments on behavioural and electrophysiological aspects of learning and memory for over a decade, and from then onwards I successfully expanded my research in the direction of top-down analysis of the molecular mechanisms of learning and memory using *Lymnaea* as my model. This research was funded for over 10 years by the MRC and BBSRC and has resulted in the publication of 19 primary research